

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

22. (currently amended) A method of removing contaminants from the surface of a substrate, said method comprising:

directing a fluid comprising a reactant, capable of chemically removing contaminants from, the surface of the substrate, onto the surface of the substrate, and irradiating the surface of the substrate with light to supply activation energy that causes a chemical reaction of the reactant with contaminants on the surface of the substrate, thereby chemically cleaning the substrate; and

jetting an aerosol comprising frozen gas particles onto the surface of the substrate to dislodge contaminants from the surface of the substrate, thereby physically cleaning the substrate,

wherein over the entire course of said irradiating the surface of the substrate and said jetting of the aerosol onto the surface of the substrate, said irradiating and said jetting are carried out in a discrete separate manner and at a separate point that prevents the frozen particles of the aerosol from being evaporated by said light.

23. (canceled)

24. (currently amended) The cleaning method of claim ~~23~~ 22, wherein said irradiating the surface of the substrate with light comprises irradiating the surface of the substrate with infrared light ~~in the first cleaning chamber~~.

25. (currently amended) The cleaning method of claim ~~23~~ 22, wherein said irradiating the surface of the substrate with light comprises irradiating the surface of the substrate with ultraviolet light ~~in the first cleaning chamber~~.

26. (original) The cleaning method of claim 22, wherein the reactant comprises a gas selected from the group consisting of oxygen and ozone.

27. (canceled)

28. (original) The cleaning method of claim 22, wherein said jetting an aerosol comprising frozen gas particles comprises freezing gaseous particles of argon, whereupon the frozen argon particles agglomerate, and jetting the frozen agglomerated particles towards the surface of the substrate.

29. (original) The cleaning method of claim 22, wherein said jetting an aerosol comprises spraying the aerosol over a width at least as great as the maximum width of the substrate, and moving the substrate relative to the aerosol until the entire surface of the substrate has been impinged by the aerosol.

30. (new) A method of removing contaminants from the surface of a substrate, said method comprising:

directing a fluid comprising a reactant, capable of chemically removing contaminants from, the surface of the substrate, onto the surface of the substrate, and irradiating the surface of the substrate with light to supply activation energy that causes a chemical reaction of the reactant with contaminants on the surface of the substrate, thereby chemically cleaning the substrate; and

jetting an aerosol comprising frozen gas particles onto the surface of the substrate to dislodge contaminants from the surface of the substrate, thereby physically cleaning the substrate,

wherein said chemical cleaning of the substrate is performed in a first cleaning chamber, and said physical cleaning of the substrate is performed in a second cleaning chamber discrete from and connected to said first cleaning chamber.

31. (new) The cleaning method of claim 30, wherein said irradiating the surface of the substrate with light comprises irradiating the surface of the substrate with infrared light in the first cleaning chamber.

32. (new) The cleaning method of claim 30, wherein said irradiating the surface of the substrate with light comprises irradiating the surface of the substrate with ultraviolet light in the first cleaning chamber.

33. (new) The cleaning method of claim 30, wherein the reactant comprises a gas selected from the group consisting of oxygen and ozone.

34. (new) The cleaning method of claim 30, wherein said jetting an aerosol comprising frozen gas particles comprises freezing gaseous particles of argon, whereupon the frozen argon particles agglomerate, and jetting the frozen agglomerated particles towards the surface of the substrate.

35. (new) The cleaning method of claim 30, wherein said jetting an aerosol comprises spraying the aerosol over a width at least as great as the maximum width of the substrate, and moving the substrate relative to the aerosol until the entire surface of the substrate has been impinged by the aerosol.

36. (new) A method of removing contaminants from the surface of a substrate, said method comprising:

directing a fluid comprising a reactant, capable of chemically removing contaminants from, the surface of the substrate, onto the surface of the substrate, and irradiating the surface of the substrate with light to supply activation energy that causes a chemical reaction of the reactant with contaminants on the surface of the substrate, thereby chemically cleaning the substrate; and

wherein said chemical cleaning of the substrate and said physical cleaning of the substrate are performed in a common cleaning chamber, and said irradiating the surface of the substrate with light comprises directing a laser beam onto a region on the surface of the substrate separate from a region on the surface at which the aerosol is directed, whereby the laser beam and the aerosol impinge discrete areas of the substrate.

37. (new) The cleaning method of claim 36, wherein the reactant comprises a gas selected from the group consisting of oxygen and ozone.

38. (new) The cleaning method of claim 36, wherein said jetting an aerosol comprising frozen gas particles comprises freezing gaseous particles of argon, whereupon the frozen argon particles agglomerate, and jetting the frozen agglomerated particles towards the surface of the substrate.

39. (new) The cleaning method of claim 36, wherein said jetting an aerosol comprises spraying the aerosol over a width at least as great as the maximum width of the substrate, and moving the substrate relative to the aerosol until the entire surface of the substrate has been impinged by the aerosol.